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ABSTRACT

The purpose of this report was to examine the effectiveness of an innovation model used by the Ohio Department of Education in conjunction with the diffusion of the Environmental Curriculum Adaptation Project. Specifically examined were (1) major factors affecting both successes and failures in the implementation of the environmental curriculum, and (2) teacher attitudes toward environmental education. A questionnaire was sent to 370 teachers and completed by 229 (62%). Three variables were identified as most important for success of the program: (1) the curriculum guides; (2) personal interest of the teacher; and (3) workshops. Major limiting factors were: (1) insufficient time in teacher's schedule; (2) higher priorities of other subjects; and (3) schedule conflicts for activities. Among the conclusions were: (1) the implementation model did a good job of conveying the particulars of the program, and (2) the importance of the support of the school administrator and needed school adjustments were not stressed enough. (Author/RH)

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Strategies Affecting Successful Implementation of an Environmental Curriculum into Ohio Schools

Dennis M. Wint William R. Kennedy
Case Western Reserve University

Paper presented at the Ohio Academy of Science Annual Meeting in Columbus, Ohio, April 1977.

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Strategies Affecting Successful Implementation of an Environmental Curriculum into Ohio Schools

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Introduction

During the past decade, educational innovation has been a priority item. This has been due in part to the large amounts of monies available from the federal and state educational agencies for the development, implementation and diffusion of innovative educational programs. Recently, both educators and non-educators have become increasingly concerned with the impact these innovations have had on the educational institution, and upon the various clients, be they students, teachers, administrators, or community members. Critical review and evaluation of innovation models help to clarify the validity, applicability, and replication potential of future educational endeavors.

The purpose of this paper was to examine the effectiveness of the innovation model used by the Ohio Department of Education in conjunction with the diffusion of the Environmental Curriculum Adaptation Project. Specifically, this paper examined:

1. The major factors effecting both successes and failures in the implementation of the environmental curriculum.
2. Teacher attitudes towards environmental education.

In the spring 1974, the Division of Planning and Evaluation (DPE) of the Ohio Department of Education initiated the innovation model named

"adaptation grants" as a mechanism to disseminate and diffuse successful educational programs developed in Ohio schools to other Ohio schools exhibiting similar needs. The model was a major change of role for the Division of Planning and Evaluation, which had previously been concerned with developmental activities, not dissemination and diffusion activities.

The Division of Planning and Evaluation identified educational programs which had been proven successful, and which had a product suitable for replication to other school systems in Ohio. The program did not need to deal directly with students, but rather, it needed to have a general educational importance. One program included in the adaptation effort, for example, aided teachers in self-evaluating their performance in the classroom by examining and reviewing their teaching which had been recorded on an audio-visual tape machine. All of the programs identified for inclusion into the adaptation process were originally funded during their developmental period by the Ohio ESEA Title III Office.

During the spring 1975, seven projects were selected for the adaptation cycle which encompassed the 1975-1976 school year. The Division of Planning and Evaluation publicized the names and the purposes of each program, and school districts applied for inclusion in the program. The adaptation grant provided monies for a period of one year. The program entitled "Environmental Curriculum" was one of the seven programs included in the adaptation cycle.

Environmental Curriculum Program

The Environmental Curriculum program consisted of a K - 12 curriculum in environmental education as well as supportive services from a project consultant and equipment, materials, supplies, and workshop

training sessions for participating teachers.

Each teacher involved in the program attended two six hour on-site workshops, one at the beginning of the school year, and the other during the second semester. The project consultant, a person who had participated in the development of the program, organized and conducted the workshops. In addition, he met with individual teachers to answer specific questions and to deal with particular problems or needs. A total of five days were spent in each school system. The project consultant was not employed by any of the participating districts.

From within each district, a project coordinator was hired to serve as the organizing agent, and to serve as the liaison between the local educational agency and the Division of Planning and Evaluation. Duties of the coordinator included: ordering equipment, materials, and supplies needed by the teachers for implementation, coordination of workshops and services; authorization of payment for services and items purchased; and reporting of the progress of the program.

To facilitate the workshop training sessions, the school system received monies to either hire substitute teachers and release the participating teachers from his/her regular assignments to attend workshops sponsored during the regular school day, or to pay the participating teacher directly for attendance at workshops held beyond the regular school day. In addition, each participating teacher received $30.00 for the purchase of miscellaneous supplies needed in the implementation of the environmental units. Most teachers made purchases as needed. In several districts, teachers pooled their $30.00 to purchase an expensive piece of equipment.

Each teacher also received a copy of the curriculum guide appropriate for his/her grade level. The guides, prepared for different grade levels and subject areas were: K - 2; 3 - 4; 5 - 6; Socio-Cultural (S/C), Junior High School; Bio-Physical (B/P), Junior High School; Socio-Cultural (S/C), Senior High School; Bio-Physical (B/P), Senior High School; and Other Curriculum Areas (OCA), Junior High and Senior High School. A total of 61 units were provided. A complete listing of the titles appears in Appendix A. The reader should be aware that the term Bio-Physical refers to units suitable for science disciplines, and Socio-Cultural refers to units suitable for social studies disciplines. It should also be noted that while several secondary unit titles were the same, the activities differed. For example, no replication of the activities in the Bio-Physical Junior High guide was found in the Bio-Physical Senior High guide. The guides provided direction for the classroom teachers to implement an environmental curriculum. In only limited cases were student materials found in the guides. All of the curriculum materials went through an extensive evaluation and revision process (in which classroom teachers were extensively utilized) prior to implementation into the adaptation schools. The specific components provided by the adaptation grant are provided in Appendix B.

Procedure

A total of fourteen school systems each received a grant of approximately $14,000 to implement the environmental curriculum into their existing programs. Teachers in ten school systems participated in this study.

Data was collected by using a four page questionnaire distributed to teachers participating in the program. For approximately half of the

teachers, the questionnaire was administered during meetings and work sessions. For the remaining teachers, the questionnaires were sent to coordinators for distribution and collection. For these latter teachers, a cover letter was included to provide direction for completion of the questions. All questionnaires were administered between March 13, 1976 and April 13, 1976.

The questionnaire itself was divided into three sections. The main section of the questionnaire was requested concerning information on the factors most helpful and most limiting in the implementation of the curriculum. For both categories, teachers were to rank order the five most important factors in order of importance, with one (1) being the most important factor, two (2) the second most important, and so forth. Thus, the lower the mean score, the more important the factor. All factors not selected were scored according to the rules of tied ranking (7.5 or 10).

The second section of the questionnaire requested information regarding the attitudes of the teachers towards environmental education and the adaptation grant. Each of the ten questions was to rate on a five point scale with one (1) indicating strong agreement to the statement, and five (5) indicating strong disagreement. Three (3) was presented as a neutral response. All questions were stated so that the desired response was on the "agreement" side of the scale.

The third section investigated the role teachers had in the initial grant application, and the method the local educational agency used to inform teachers of their involvement.

Limitations

A major limitation of this study was that no data was collected prior to the involvement of the teachers in the program. Had a teacher

attitudinal survey been conducted in September, it would have been possible to compare the pre-program positions with those in the middle of the year.

Another limitation relates to the short period of time some teachers had to use the curriculum materials prior to collection of the data. The initial training workshops were held between September 27, 1975 and December 6, 1975. While some teachers had six months to use the units, others had only three months.

Results

Sixty-two percent (229) of the 370 participating teachers filled out and returned the questionnaire. Table 1 presents the tabulation of response returns by grade level.

Insert Table 1 about here

Facilitating Factors

Across all 229 teachers responding to the question requesting a ranking of the most important factors needed for success, three factors were consistently identified:

- the curriculum guides, statement #1
- personal interest (of the teacher), statement #8
- the introductory training workshop, statement #6

The results by grade level are presented in Table 2. For nearly every grade level these factors occurred in the above order. The only exception was found in the B/P and S/C, 7-12 group where the respondents identified item #3, "Equipment, supplies, and materials," as the third most important success factor.

When referring to the detailed results for this analysis, as reported in Appendix D, one notes there was a clear differentiation between the three most important factors and the remaining seven factors. Because of the relatively high mean scores, it appeared that five of these factors were of little value to the teachers. These factors were:

- the $30.00 which I could use for miscellaneous supplies, #2
- the project consultant, #4
- the availability of a coordinator within the district, #5
- support from the school administration, #7
- other factors (not listed), #10

Insert Table 2 about here

Limiting Factors

Similar analyses were run on a group of factors described as limiting implementation of the environmental program. Again, the analyses indicated that three factors were of primary importance in limiting the successful implementation of the curriculum. These factors were:

- insufficient time in my teacher schedule, #1
- higher priorities of other subjects, #2
- scheduling conflicts for activities, #6

The results for the limiting factors are presented, by grade level, in Table 3.

While all teachers agreed about the primary limiting factor, "insufficient time," there was disagreement as to the order of the second and third limiting factors. Fifth and sixth grade teachers, and B/P and S/C 7-12 teachers rated "scheduling conflicts for activities more important than

"higher priorities of other subjects," which was reverse of the response of the other three grade levels. The mean score for each limiting factor by grade level is presented in Appendix E. One will again note the distinct differences between the three most limiting factors and the remaining 12 limiting factors. All of the latter had mean scores of at least 8.77 and many approach 10.00. Thus, it appeared most of the teachers did not consider these 12 factors important in limiting the success of their program.

Insert Table 3 about here

Environmental Attitudes

For the attitude section of the questionnaire, the results indicated an overall positive attitude towards environmental education and the adaptation grant. The positive attitude responses were fairly consistent across all groups of teachers. The summarized data, comparing mean scores for each grade level is presented in Table 4.

The teachers responded more positively to questions 1, 2, 3, 4 and 5 than to questions 6, 7 and 8. The mean values for questions 9 and 10 were the highest, indicating a less positive response and less agreement for these two questions. There was some concern as to the validity of these two items. Early in the administration of the questionnaire, an extreme range of scores was noted. In order to identify the reason, teachers were interviewed regarding the importance of the coordinator and the consultant. It was discovered that many teachers defined "implementation" as actually teaching the material, rather than as a process which would include supplementary assistance and inservice training, i.e., the ranking of the introductory workshop as the third most important success factor was viewed as aiding implementation rather than being viewed as an integral part of

the implementation.

Insert Table 4 about here

Teacher Participation

The next section of the study investigated the role of the teacher in the initiation of the original grant. As indicated by the response to the questionnaire, 91 percent of all responding teachers did not have a role in the original application. Seven percent said they heard of the grant and recommended an application be submitted, and two percent assisted with the preparation of the application. Thus, it was apparent that teachers had little responsibility in the process of acquiring this adaptation grant.

The question of whether a teacher was a volunteer or was required to participate was also considered. Most of the teachers responded (58 percent) that they had volunteered for the program. An additional 38 percent said they were "requested" to participate. Only four percent reported they were required to be involved. Furthermore, thirty nine-percent of the teachers were notified before September that the grant was funded, 45 percent heard of the funding in September, and 27 percent were contacted after September.

The project coordinator and/or building principal served as the major source of information about the grant funding to 83 percent of the teachers. Four percent learned about the grant being funded from other teachers, while another five percent read of the grant in the newspaper.

Discussion

A knowledge of the factors teachers consider most important in the successful implementation of a curriculum aids the educator in preparing

a program which has the best potential for success. For the teachers responding to the question concerning the most important factors needed for success, three factors were identified as important. They were:

- The curriculum guides
- The personal interest of the teacher
- The introductory training workshop.

One other factor "equipment, supplies, and materials" was identified by secondary teachers as important. The other seven factors that were listed were judged of little significance by the teachers.

However, one of those seven factors was the project coordinator within the school district. While the teachers did not judge the project coordinator as important, this may have been the result of a narrow perspective that viewed the coordinator as unimportant since he/she did not actually help teach the unit(s). The authors believe, however, that the coordinator was an essential component of the program. It was largely through the efforts of the coordinator that the logistics and "behind the scenes activities" were completed. The teachers did not have to worry about the infinite number of details, as budgets, associated with an innovative program.

The study was also interested in determining what teachers viewed as obstacles to implementation. The three major limiting factors identified by the teachers were:

- Insufficient time in my teacher schedule
- Higher priorities of other subjects
- Scheduling conflicts for activities.

These factors transcended the scope of the project. It is impossible for a project of modest proportions (as this one was) to create more time in the teaching schedule for instructional innovations. There are few people who used "insufficient time" as a reason why they were unable to

accomplish more that would admit they were inefficient with the use of their time.

Likewise, "the higher priorities of other subjects" cannot be adressed readily by a project of this size because teachers often feel this priority constraint is imposed upon them by the school administration (whether or not that is realistic). The adopted text, the curriculum guide, the new curriculum addition, or the necessity to cover a certain percentage of the book, are all factors that contribute to this limiting factor. True, some demands are mandated by state standards or the school administration. But teachers should recognize that they as teachers, have expectations as to what should be included as course content, and they accordingly structure the course to reflect their own expectations.

The "scheduling conflict" is legitimate concern for secondary teachers who are locked into 45 minute periods. Many activities in the curriculum guides involve the student in studies or projects. It is more difficult to plan the time of student oriented projects than teacher controlled lectures. This type of project cannot reorganize an entire school schedule to allow for blocks of time needed for the activities.

The analysis of the attitudes of the teachers indicated that teachers were positive both towards environmental education and the adaptation grant. Ninety-one percent agreed the program had been a good experience for them, 8.5 percent were neutral, and only 0.5 percent disagreed with the statement. All but three teachers responded that they would use the curriculum materials next year, and all but five teachers said that the curriculum had a positive impact on their students. In addition, 96 percent indicated that environmental education should be an important part of a school curriculum, and 99 percent agreed that every student should be involved in an environmental

program at some time during his/her education. Question #7 (teacher interest) and question #8 (teacher competency) were more difficult to interpret because of the lack of baseline data about teacher attitudes prior to involvement in the program. Nevertheless, 80 percent responded they were more interested in environmental education due to involvement in the program; 13 percent were neutral to the question. Sixty-six percent agreed they were more competent due to the experience, 30 percent were neutral, and 4 percent disagreed. The validity of questions #9 and #10 was questionable due to the teachers' varying definitions of the term "implementation."

Ninety-one percent of teachers had no role in the innovation of the environmental curriculum. Seven percent indicated they "heard about" the grant and recommended an application be submitted, and another two percent assisted with the preparation of the application. A possible reason for such low teacher involvement in the project may be due to the model used by the Ohio Department of Education to disseminate information to schools. Typically, the initial contact is made to the superintendent of schools, who in turn, distributes the information to others in the district. If a district is large, teachers often never hear of a project because of the many channels between them and the superintendent. Furthermore, some superintendents view innovative efforts in their districts as administrative responsibilities, not teacher responsibilities.

Conclusions

The teachers appeared to be at a "high" level of environmental awareness, as evidenced by the attitude scale results. Whether the teachers were environmentally aware before participation in the grant or became so based upon their participation cannot be answered by this

study.

The teachers in this study indicated that a well constructed environmental program is desired and useful in aiding teachers in the task of bringing environmental concerns to the attention of their students. They liked the well constructed, detailed curriculum guides and the introductory training workshop. Since the workshop was ranked highly, it indicates that the person who runs the session is vital to the potential success of the project.

However, the three factors that were identified as obstacles to implementation were not covered by the curriculum project. Those factors appeared to be indigenous to the school system. The authors doubt whether an environmental package can be constructed to remove those obstacles.

The implementation model needs to do more than create a good workshop to acquaint the teachers with packages. The limiting factors the teachers identified as being most important are under the control of the district or school administrative staff. The implementation model was weak, therefore, in addressing these concerns. Obviously, the model must incorporate a method of involving administrative staff in the implementation process. Perhaps this could take the form of an orientation session that delineates the type of activities that should be accommodated within their school structures or schedules. Also, teacher and administration curriculum committees should be encouraged by the model to confront the subject priorities issue directly. A case can be made for the necessity of environmental concerns in a school curriculum in terms of the energy crisis that President Carter alluded to in his address to the Congress in April 1977.

In conclusion, the implementation model of the State of Ohio did a good job in conveying the particulars of an environmental curriculum

package but did not stress enough the contribution that a school administration must make in order for the implementation to succeed.

Recommendations for Further Study

It was the feeling of the authors that there was a difference in the attitude and performance between elementary and secondary teachers toward an environmental education program. Elementary teachers appeared to be more open and eager to try new programs, while secondary teachers were hesitant to participate. Assuming that this difference does exist, the question must be asked, "Why does it exist, what are the factors responsible for the difference, and where did the factors originate?" A comprehensive study of this topic would be an invaluable contribution to the innovative process. Representative questions used to organize such a study would include:

1. What mechanism was initially used by the school administration to involve teachers in the project?
2. Were elementary and secondary teachers contacted in an equal fashion regarding participation, or was one group selected over another?
3. How many teachers were contacted, b[illegible]eclined to participate?
4. What were the major reasons for their decline?
5. How do teachers view innovative efforts initiated within the school?
6. What are the rewards, punishments, and risks associated with educational innovation?
7. Why do so few social studies teachers participate in an environmental education program? Some possible consideration for such

a study are:

a. Problems of the environment are generally viewed as science problems, and social studies teachers do not see a role for themselves in that arena.

b. Compared to other social problems, the environment is perceived as less serious than more immediate social ills such as racism, poverty and so forth.

c. The curriculum materials were of insufficient interest, quality or application to warrant participation of a social studies teacher.

8. Did the rankings and comparisons of the major facilitating and limiting factors change after the adaptation services were no longer available? The data was collected for this study during the adaptation year. The components of the Environmental Education Package were not listed as major limiting factors by the teachers. The authors expect that the facilitating and limiting factors would change in the years following the adaptation process where school systems would be totally responsible for supporting the teaching of environmental education.

TABLE 1. The number of participating teachers versus the number of teachers completing and returning the questionnaire.

Grade Level	Total Number Teachers	Number of Responses	Percent Response
K-2	103	74	72
3-4	87	58	67
5-6	82	50	61
S/C 7-9	13	7	54
B/P 7-9	24	18	75
S/C 10-12	14	2	14
B/P 10-12	21	10	47
OCA 7-12	26	10	38
Total	370	229	62

TABLE 2. The mean rank scores for the top three ranked success factors for all teachers and the grade levels; list of the ten factors and their overall mean ranks.

Grade Level	RANK #1 Question Number	RANK #1 Mean	RANK #2 Question Number	RANK #2 Mean	RANK #3 Question Number	RANK #3 Mean
All Teachers (229)	1	2.67	8	3.36	6	3.79
K-2 (74)	1	2.42	8	2.97	6	3.38
3-4 (59)	1	2.54	8	3.28	6	3.64
5-6 (50)	1	3.16	8	3.69	6	3.83
B/P & S/C 7-12 (36)	1	2.76	8	3.29	3	3.82

Mean Rank	Success Factors
2.67	1. The curriculum guides.
6.25	2. The $30.00 which I could use for miscellaneous supplies.
5.17	3. The equipment, supplies, and materials provided by the grant.
6.16	4. The project consultant.
7.01	5. The availability of a coordinator within the district.
3.79	6. The introductory training workshop.
6.45	7. Support from the school administration.
3.36	8. My personal interest.
5.92	9. My personal expertise, background, and experience.
7.18	10. Other. Specify_____

TABLE 3. The mean rank scores for the top ranked limiting factors for all teachers and the grade levels; list of the fifteen factors and their overall mean rank scores.

Grade Level	RANK #1 Question Number	RANK #1 Mean	RANK #2 Question Number	RANK #2 Mean	RANK #3 Question Number	RANK #3 Mean
All Teachers (229)	1	3.20	2	4.93	6	5.65
K-2 (74)	1	2.92	2	4.00	6	6.04
3-4 (59)	1	2.71	2	4.53	6	5.08
5-6 (50)	1	4.80	6	6.34	2	6.78
B/P & S/C 7-12 (36)	1	2.47	6	5.14	2	5.47

Mean Rank	Limiting Factors
3.20	1. Insufficient time in my teaching schedule.
4.93	2. Higher priorities of other subjects.
9.88	3. Lack of personal interest.
8.77	4. Lack of personal expertise, background, and experience.
8.60	5. Unavailability of equipment, materials, and supplies.
5.65	6. Scheduling conflicts for activities, especially those outside.
9.60	7. Unsuitability of the training workshop and consultant services.
9.78	8. Lack of support from school administration.
9.36	9. Curriculum not suited to the abilities and interests of students.
9.22	10. Insufficient variety of activities from which to choose.
9.82	11. Controversial nature of the activities.
9.36	12. Lack of student interest.
8.84	13. Restrictions on the use of monies to purchase equipment and materials.
9.63	14. Lack of freedom for innovation because of constrains of guidelines.
9.16	15. Other. Specify_____

TABLE 4. The mean scores for each attitude question (1.0 was strongly agree, 5.0 was strongly disagree) for each grade level and overall teachers.

Question Number	K-2	3-4	5-6	B-P & S-C 7-12	Total
1	1.57	1.69	1.88	1.83	1.74
2	1.53	1.71	1.96	1.92	1.75
3	1.97	1.97	2.06	2.14	2.03
4	1.47	1.54	1.60	1.47	1.54
5	1.41	1.42	1.46	1.33	1.44
6	2.08	2.22	2.26	1.94	2.15
7	1.85	1.92	2.14	2.28	2.02
8	2.26	2.14	2.26	2.50	2.28
9	2.43	2.54	2.44	2.39	2.45
10	2.46	2.49	2.60	2.50	2.48

Questions

1. Involvement in this program has been a good experience for me.
2. I will use the environmental materials next year.
3. The environmental curriculum has made a positive impact on my students.
4. I feel environmental education is an important part of a school's curriculum.
5. Every student should be involved in an environmental program at some time during his education.
6. I plan to improve my expertise in environmental education by additional reading, attending workshops, etc.
7. I am more interested in teaching environmental education after the experience this year than I was before I began the program.
8. I am now a more competent teacher of environmental education than I was before I began the program.
9. The coordinator within the school district was of assistance in my implementation of the curriculum.
10. The project consultant helped me to implement the curriculum.

APPENDIX A:

TITLES AND CODE NUMBERS

OF THE ENVIRONMENTAL CURRICULUM UNITS

Environmental Learning Experiences for Grades K - 2:

01 - Preparing for Seasonal Change: Fall
02 - The Terrarium
03 - Food Chains
04 - Food Webs
05 - Birds in Our Lives
06 - Trees
07 - Trash
08 - Dirt and Stuff
09 - Kittens

Environmental Learning Experiences for Grades 3 - 4:

10 - The School Lawn
11 - The Vacant Lot
12 - Giants on the Land: Trees in Our Environment
13 - Wild Ideas with Wild Plants
14 - The Endangered Predator
15 - The Cemetery
16 - An Environmental Quality Index for School and Neighborhood
17 - Poetry
18 - Water
19 - The Breath of Life - or Death: Air Pollution

Environmental Learning Experiences for Grades 5 - 6:

20 - Problem Solving
21 - How to Plan a Clean-up Campaign in the Local Community
22 - Scars Upon the Land
23 - Water: Life Blood of the Earth
24 - Noise Pollution
25 - Succession and the Pond Community
26 - Animals and Their Habitat
27 - Our Native Lands: Conserve and Preserve

Environmental Learning Experiences for Bio-Physical, Junior High School

35 - Earth Thoughts
36 - Quality of Life
37 - Environmental Inventory
38 - Environmental Management
39 - Community Problems
40 - Futurism

APPENDIX A: (Cont'd)

Environmental Learning Experiences for Bio-Physical, Senior High School

41 - Earth Thoughts
42 - Quality of Life
43 - Environmental Inventory
44 - Environmental Management
45 - Community Problems
46 - Futurism

Environmental Learning Experiences for Socio-Cultural, Junior High School

47 - Earth Thoughts
48 - Quality of Life
49 - Environmental Inventory
50 - Environmental Management
51 - Politics of Environment
52 - Community Problems
53 - Futurism

Environmental Learning Experiences for Socio-Cultural, Senior High School

54 - Earth Thoughts
55 - Quality of Life
56 - Environmental Inventory
57 - Environmental Management
58 - Politics of Environment
59 - Community Problems
60 - Futurism

Environmental Learning Experiences for Other Curriculum Areas

61 - Me and My Environment
62 - Art and Architecture
63 - Music in the Environment
64 - Leisure/Work (Junior High)
65 - The Performing Arts
66 - Leisure/Work (Senior High)
76 - Mathematics

APPENDIX B:

SPECIFIC COMPONENTS OF THE ADAPTATION GRANT

MAXIMUM PROVIDED BY GRANT

Equipment

Elementary

8 Instamatic Cameras

4 Portable Tape Recorders

8 Binoculars

4 Aquariums

Secondary

8 Instamatic Cameras

8 Portable Tape Recorders

4 Polaroid Cameras

8 Compasses

NOTE: The number of items indicated above and provided by the grant is based on an enrollment of 50 teachers. The tables below provide the means for computing the amounts of certain materials and equipment your project would be entitled to.

Elementary Participants

1 - 20 teachers = 50 percent allocation

21 - 40 teachers = 100 percent allocation

Secondary Participants

1 - 5 teachers = 50 percent allocation

6 - 10 teachers = 100 percent allocation

Materials

The materials provided by the grant are listed below. Project coordinators will be advised by a consultant prior to placing orders for such.

Elementary

- Film (photographic)
- Recording Tape
- Stop Watch
- Garden Trowels
- Magnifying Glasses
- Periodicals
- Library Books
- Simulation Games
- Miscellaneous Instructional Materials
- Unit Rating Form
- Curriculum Units and Catalogs

Secondary

- Film (photographic)
- Recording Tape
- Steel Tape Measures
- Soil Test Kits
- Water Test Kits
- Periodicals
- Library Books
- Simulation Games

APPENDIX C:

QUESTIONNAIRE

School District _____ Date _____

Grade Level (circle): K 1 2 3 4 5 6 7 8 9 10 11 12

Subject Area (circle): Bio-physical Socio-cultural Other _____ (specify)

Age _____ Sex _____ No. Years Teaching Experience _____ Highest Degree Earned _____

I (circle one) did did not attend the first training workshop.

Please identify the major factors which aided you in the implementation of the Environmental Curriculum. Rank the FIVE most important factors in order of importance. Use ONE (1) to indicate the most important factor, TWO (2) the second most important, etc.

_____ 1. The curriculum guides

_____ 2. The $30.00 which I could use for miscellaneous supplies.

_____ 3. The equipment, supplies, and materials provided by the grant.

_____ 4. The project consultant.

_____ 5. The availability of a coordinator within the district.

_____ 6. The introductory training workshop.

_____ 7. Support from the school administration.

_____ 8. My personal interest.

_____ 9. My personal expertise, background, and experience.

_____ 10. Other. Specify _____

Please identify the factors that most LIMITED your successful implementation of the Environmental Curriculum. Rank the FIVE most limiting factors in order of importance. Use ONE (1) to indicate the most important limiting factor, TWO (2) for the second most important limiting factor, etc.

_____ 1. Insufficient time in my teaching schedule.

_____ 2. Higher priorities of other subjects.

_____ 3. Lack of personal interest.

_____ 4. Lack of personal expertise, background, and experience.

_____ 5. Unavailability of equipment, materials, and supplies.

_____ 6. Scheduling conflicts for activities, especially those outside.

_____ 7. Unsuitability of the training workshop and consultant services.

_____ 8. Lack of support from school administration.

_____ 9. Curriculum not suited to the abilities and interests of students.

_____ 10. Insufficient variety of activities from which to choose.

_____ 11. Controversal nature of the activities.

_____ 12. Lack of student interest.

_____ 13. Restrictions on the use of monies to purchase equipment and materials.

_____ 14. Lack of freedom for innovation because of constrains of guidelines.

_____ 15. Other. Specify _____

Please respond to the following statements regarding your attitudes towards environmental education and the environmental curriculum project. Circle the number between one (1) and five (5) which best represents your position. Use the following system:

1 = Strongly agree 3 = Neutral 4 = Disagree
2 = Agree 5 = Strongly Disagree

1. Involvement in this program has been a good experience for me.	1	2	3	4	5
2. I will use the environmental materials next year.	1	2	3	4	5
3. The environmental curriculum has made a positive impact on my students.	1	2	3	4	5
4. I feel environmental education is an important part of a school's curriculum.	1	2	3	4	5
5. Every student should be involved in an environmental porgram at some time during his education.	1	2	3	4	5
6. I plan to improve my expertise in environmental education by additional reading, attending worksheps, etc.	1	2	3	4	5
7. I am more interested in teaching environmental education after the experience this year than I was before I began the program.	1	2	3	4	5
8. I am now a more competent teacher of environmental education than I was before I began the program.	1	2	3	4	5
9. The coordinator within the school district was of assistance in my implementation of the curriculum.	1	2	3	4	5
10. The project consultant helped me to implement the curriculum.	1	2	3	4	5

Answer the following questions by checking the appropriate answer or filling in the space.

1. Regarding the <u>original</u> preparations and application for this grant, I:

_____ heard of the grant and suggested an application be submitted.
_____ assisted in the preparation of the grant application.
_____ had no role.

2. I became involved in the program by:

_____ volunteering
_____ being requested to participate.
_____ being required to participate.

3. I learned the grant had been funded about:

_____ June
_____ July
_____ August
_____ September
_____ After September

4. I first heard about the grant being awarded to our district from a:

_____ newspaper article
_____ radio or TV broadcast
_____ school newsletter.
_____ person. Specify name and position _____
_____ other. Specify _____

Please feel free to add any additional comments regarding the program:

APPENDIX D:

Comparison Of Mean Rank Scores For The

Major Success Factors For Each Grade Level (N)

Question No.	K-2 (74)	3-4 (59)	5-6 (50)	B/P & S/C 7-12 (36)	TOTAL (229)*
1	2.42	2.54	3.16	2.76	2.67
2	6.55	6.04	6.18	6.29	6.25
3	5.55	5.42	5.18	3.82	5.15
4	6.18	6.14	6.19	6.14	6.16
5	6.93	7.02	7.18	6.89	7.01
6	3.38	3.64	3.83	5.07	3.79
7	6.82	6.35	6.02	6.29	6.45
8	2.97	3.28	3.69	3.29	3.36
9	6.12	5.92	5.85	5.81	5.92
10	7.01	7.26	7.22	7.34	7.18

* includes 10 teachers in the OCA 7-12 category.

APPENDIX E:

Comparison Of Mean Rank Scores For The

Limiting Factors For Each Grade Level (N)

Question No.	K-2 (74)	3-4 (59)	5-6 (50)	B/P & S/C 7-12 (36)	TOTAL (229)
1	2.92	2.71	4.80	2.47	3.20
2	4.00	4.53	6.78	5.47	4.93
3	9.79	10.00	10.00	9.83	9.88
4	9.00	8.73	8.22	9.17	8.77
5	8.89	8.51	8.42	8.39	8.60
6	6.04	5.08	6.34	5.14	5.65
7	9.81	9.85	9.38	9.11	9.60
8	9.68	10.00	9.88	9.61	9.78
9	9.46	9.53	9.02	9.56	9.36
10	9.51	9.42	8.42	9.19	9.22
11	9.93	9.90	9.86	9.33	9.82
12	9.53	9.56	9.52	9.00	9.36
13	8.74	8.68	8.70	9.39	8.84
14	9.85	9.49	9.60	9.53	9.63
15	9.28	9.59	8.46	8.92	9.12